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Vaxfectin-formulated Measles DNA Vaccine Elicits Long-term Protection and Sterilizing Immunity in Nonhuman Primates

By
NewsRx.com

Vical Incorporated (NASDAQ:VACL) announced that a measles DNA vaccine formulated with the company's Vaxfectin(TM) adjuvant elicited protective levels of neutralizing antibodies in juvenile (1 - 2 year old) nonhuman primates confirmed by complete protection following challenge more than one year after vaccination, and sterilizing immunity as evidenced by no clinical signs of disease and no detectable virus after challenge. In a separate study, the same vaccine elicited protective levels of neutralizing antibodies in infant (6 - 10 weeks old) nonhuman primates with no vaccine-related adverse events. The studies were conducted in collaboration with Diane E. Griffin, M.D., Ph.D., Alfred and Jill Sommer Professor and Chair of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, under a grant from the Bill and Melinda Gates Foundation.

"Sterilizing immunity is a rarely achieved ultimate goal in vaccination," said Vijay B. Samant, Vical's President and Chief Executive Officer. "The ability to provide such complete immunity with no adverse events offers proof of concept for Vaxfectin(TM)-formulated DNA vaccines. We look forward to continued development of the measles vaccine program by our collaborators at Johns Hopkins."

"We have tested a number of measles DNA vaccines, and the data relating to Vical's Vaxfectin(TM)-formulated DNA vaccine showed marked differences both in terms of disease resistance after exposure and antibody levels over the other vaccines, without significant side effects," said Dr. Griffin. "These data are exciting because of the potential of providing safety and efficacy suitable for infants and young children in the developing world, and continued development could result in a major impact on global measles disease and death rates."

The study in juvenile rhesus macaques tested the protective efficacy of a bivalent DNA vaccine encoding measles hemagglutinin and fusion glycoproteins. Vaccine was delivered by intradermal needle-and-syringe injection of two 0.5 mg doses ~~or~~ by intramuscular needle-and-syringe injection of two 1.0 mg doses at four-week intervals. All vaccines were formulated with Vical's patented Vaxfectin(TM) adjuvant. Neutralizing antibody levels exceeded the accepted protection threshold prior to the second injection at Week 4, peaked at Week 5, and remained well above the accepted protection threshold for more than one year, with no difference noted between routes of administration. Animals were challenged by intratracheal inoculation at Week 55, resulting in complete protection of all vaccinated animals against disease symptoms. None of the vaccinated animals had detectable levels of measles virus at any time point tested, in contrast to negative control animals which all had detectable virus. Measles-specific T-cell responses were also detected after vaccination. The vaccines were well-tolerated in all animals.

The study in infant rhesus macaques tested only intradermal needle-and- syringe delivery of vaccine at the same 0.5 mg dose used in the juvenile animals. Neutralizing antibody levels exceeded the accepted protection threshold prior to the second injection at Week 4, peaked at Week 8, and remained above the accepted protective level throughout the 20-week follow-up period. No adverse events related to the vaccination were observed. Data were presented by Adrian Vilalta, Ph.D., Vical's Senior Scientific Manager of Immunogen Discovery, at the annual meeting of the American Society of Gene Therapy (Seattle, May 30 - June 3).

Keywords: Adverse Drug Effect, Adverse Drug Event, Adverse Drug Reaction, Biotechnology, Biotechnology Business, Biotechnology Company, DNA Research, DNA Vaccines, Gene Therapy, Genetics, Genomics, Immunization, Immunology, Measles, Medical Device, Molecular Microbiology, Public Health, Treatment, Vaccination, Vical, Vical Incorporated.

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